

INTRODUCTION

The purpose of this policy document is to develop a framework along with a set of guidelines and regulations to ensure a common approach to the delivery of structured doctoral degree (PhD) programmes at the Institute. The policy has been drawn up to keep in line with current changes to the provision of doctoral degree education within the HEI sector in Ireland.¹ It is envisaged that a more structured approach to the delivery of PhD programmes will enhance the quality of graduate education, reduce completion times and facilitate provision of a better-rounded PhD graduate for entry into the competitive working arena. The policy has been drawn up in line with those of other HEIs in Ireland, and in accordance with national quality assurance guidelines provided by HETAC and the IUQB.²

Current Provision of PhD Education at ITT Dublin:

Procedures are in place for the assurance of standards and quality with respect to PhD programmes. These are outlined in the *Quality Assurance Procedures Manual Book 3* and the *Code of Practice for Research Degree Programmes*. The whole system is guided by HETAC criteria and established international/national best practice and standards. The quality of postgraduate researchers produced is influenced by a number of factors including the training received to ensure an understanding of the role of research in the discipline and its application, develop the ability to carry out independent research, gain from the overall research experience, generate results from their research and complete their programme within the appropriate timeframe. The training of doctoral degree students is ongoing and goes beyond the initial induction training received. It encompasses generic training in topics such as communication & presentation, academic English, health and safety, ethics, generally provided on a needs basis.

The Changing Landscape for PhD Education:

The landscape of doctoral education has changed significantly in recent years in the international arena.³ Key features of that landscape include the following:

- Extension of PhD programmes from 3 to 4 years minimum within the university sector in Ireland
- Introduction of research training or graduate research education programmes (GREP), the focus of which is to broaden the programme beyond the tight specialist and project specific nature and expand to prepare a more rounded high level graduate, who would also be better prepared to work in a business/industry environment and not just stay in an academic environment.

PhD programmes which incorporate measures to ensure that all graduates have a suitable range of specialist and generic skills and knowledge are often termed ‘structured PhD programmes’.

¹ The IUA Contextual Statement regarding structured PhD programmes 2009.

² Regulations and Guidelines for Structured Research Doctoral Programmes from UCD, DIT, NUI Maynooth; Guidelines; Good Practice in the Organisation of PhD Programmes in Higher Education, IUQB, 2009; HETAC Policy documents available at www.hetac.ie

³ For a more detailed overview, see – Chris Park (2007) *Redefining the Doctorate*. York: The Higher Education Academy.

Definition of Structured PhD:

A structured PhD provides a much higher degree of training for the research student than the traditional ‘apprenticeship’ model which has relied largely on one-to-one interactions with a supervisor. In a structured programme PhD students are provided with a wider range of transferable skills and with improved professional development.⁴

In essence a structured PhD can be described as ‘*a PhD in which transferable and disciplinary training is an integral part of the education, and which is characterized by a high quality research experience.*’ The duration would be four years either as a research Masters transferred to PhD status or as a 4 year PhD with a confirmation step and the milestones would be established by the institution and carefully monitored.⁵ Not all programmes would be identical as the requirements of different disciplines are not identical.

Rationale for the Proposed Model:

International experience⁶ shows that Graduate Schools can deliver: quality-led training of early stage researchers in multi-disciplinary environments; structured, relevant generic and transferable professional skills training enabling the PhDs produced to develop their careers in diverse sectors of the economy, including intellectual property management and commercialisation skills; industrial placements and modular, transferable postgraduate courses, both practical and theory-based with built-in industrial expertise; and further training for industrial researchers requiring skills/knowledge upgrading.

Nationally, the IUA statement on PhD Graduate skills has catalysed the development of structured doctorates within the HEI sector, informing the basis for the current Institute policy document.

Graduate Research Education Programme Strategic Partnerships:

The Institute is involved in a number of Strategic Innovation Funded (SIF) projects on enabling the development of 4th level education programmes at the highest level of award, with partners within the sector (through the Institute Sector Research Alliance <http://www.researchalliance.ie/>) and universities in the Dublin area (through the Dublin Regional higher Education Alliance http://www.drhea.ie/grad_educ.php) and the targets and outputs are already having an impact on student supports and training.

FRAMEWORK

A Structured PhD Programme incorporates the apprenticeship model and as such recognises that the central element of any PhD is research and generation of knowledge and therefore **the thesis remains the basis on which the award is made**. However to facilitate provision of a well-rounded PhD education, training in generic and discipline specific skills which support personal and career development are embedded in a 4 year programme. This training provides additional means of improving skills development. However it is acknowledged that a balance between research and skills training must be considered and maintained.

In the case of PhD programmes for which the Institute has Delegated Authority a School Postgraduate Research Board (SPRB) will be established. For all other PhD programmes the Institute Postgraduate Research Board (IPRB) will be the Quality Assurance body. The SPRB will report to the IPRB biannually.

⁴ CIRCA report *PhD Education Review* (October 2008) prepared for the HEA.

⁵ *The Structured PhD in Ireland; progress and prospects* An opinion piece prepared for the HEA (2008) by Professor Bernard Morley (Imperial College London) and Professor Chris Park (University of Lancaster).

⁶ <http://www.entemp.ie/publications/science/2006/sciencestrategy.pdf>

Key characteristics of the Structured PhD Programme (IUA Statement, 2009):

- The core component is the advancement of knowledge through original research; at the same time the structured PhD is designed to meet the needs of an employment market that is wider than academia;
- A high quality research experience, training and output should be consistent with international norms and best practice – to include a formalised integrated programme of education, training and personal and professional development activities, the development of discipline-specific knowledge, research skills and generic / transferable skills, declared outcomes and graduate attributes in line with national and international best practice;
- Supervision by a principal supervisor(s), normally with a supporting Research Board;
- Progress to completion is formally monitored against published criteria in the Code of Practice for Research Degree Programmes
- Successful completion and examination of the research thesis is the basis for the award of the PhD degree;
- Registration is normally for four years for a full-time student.

The basic framework a structured PhD programme will be centred on the following components:

Element 1	Original Research Thesis & Viva Voce Examination	270 ECTS
Element 2	Research Plan	30 ECTS
Element 3	Research Skills	60 ECTS
• Element 3A	Generic Skills	
• Element 3B	Discipline Skills	
• Element 3C	Non-Taught Skills	

In all cases students registering on structured PhD programmes must attend and participate in the *Institute Induction Programme*. This is a general orientation course encompassing background information necessary for the student to function in a research environment. Details of the Induction Programme content are available in the Research Degree Student Handbook.

Credits and Modules

The structured PhD is to be comprised of 360 credits over a four year period (or part-time over a six year period). Of this 360 credits, a student must take a minimum of 60 credits in taught modules (for example, 30 in research planning, and 15 in generic/transferable modules and 15 in subject/specialist modules, though this ratio may vary with discipline) and not exceed 90 credits in taught modules over the duration of their programme. Only taught modules that have been approved by the Institute's Quality Assurance system are available for selection.

If a student does less than 90 credits in taught modules they must make up the difference to 90 credits by means of non-taught skills credit. The supervisor, with the student and the candidate's I/SPRB, agrees the mix between generic/transferable credits and subject/specialist credits. The SPRB annually reviews the selection of modules for the individual's programme. A student must obtain at least 30 credits in year 1, but no more than 55 credits. A student must obtain at least 25 credits in year 2, but no more than 45 credits. A student must obtain the overall minimum of 360 credits in years 3 and 4. 1 ECTS-like credit is equivalent to 20-25 hours of student effort. 5 or 10 credit modules should be the norm. The SPRB or IPRB, as appropriate is free to decide the most appropriate distribution of credits over the duration of the programme and the SPRB or IPRB is free to review the selection of modules for each individual's programme at its annual progress review meeting. The taught credits are taken into account in the annual review progress and the titles of modules and assessment grades are inserted in the student's transcript.

The student's original research as presented in the thesis (or in such form appropriate to their discipline) is the sole means of assessment for the award of the PhD. Students will not be permitted to submit their thesis (or equivalent) for examination without having accumulated the required 60 to 90 taught credits as defined by the SPRB or IPRB.

This aligns the Institute structured PhD with the set of key principles that emerged from the March 2006 HEA Forum on Graduate Education, and the Bologna Seminar on "Doctoral Programmes for the European Knowledge Society" (Salzburg, 3-5 February 2005).

Element 1 Original Research Thesis & Viva Voce Examination:

The thesis is the basis on which the award is made. The thesis captures the new knowledge and describes how the researched work encompasses new knowledge, new interpretation and new explanations and so makes an original contribution to knowledge.

The dissertation for a PhD must represent 'a significant contribution to learning', for example through the discovery of new knowledge, the connection of previously unrelated facts, the development of a new theory, or the revision of older views, and must take account of previously published work on the subject.

The thesis will also evidence the achievement of research skills. The research skill competence and ability of the candidate will be reflected in the thesis.

The thesis is examined by academic peers. The process that the internal examiner is a filter on the release of the thesis to the external examiner reflects an emphasis on our process of internal review of work within research groups. External examiners carry the responsibility for ensuring parity of standards between institutions.

The examination process is unchanged⁷ with the exception that in order to commence the submission process the candidate must have completed the 'training elements' of the PhD program. Evidence of the completion of specific training elements might be included in the briefing letter to the external examiner.

Element 2 Research Plan:

The research plan is a detailed description of how a student will conduct their research study and provides a template on which to perform annual or transfer evaluations. The plan should be drawn up by the research supervisory team with the postgraduate student. It should incorporate the following:

- The hypothesis/research question
- Background information and rationale for the proposed novel research
- Schedule of work packages/tasks/methodologies and include measurable outcomes and time lines for the 4 years
- List of proposed generic and discipline skills to be completed, with suggested timelines
- Plans for dissemination of results
- Possible layout of final thesis.

The research plan should indicate when annual evaluations/transfer applications will take place. The agreed research plan should be lodged with the SPRB or IPRB, as appropriate, within one month of starting on the programme, so that the schedule for generic and discipline specific skills training for the year can be developed. An update plan should be submitted on an annual basis to the sponsoring School.

⁷ (QA Manual 2009 BOOK 3 Research Degree Programme Quality Manual <http://staff-intranet/SupportServices/Registrar/QualityAssuranceProcedures/> or <http://staff-intranet/media/Media.20200.en.pdf> page 36)

The distribution of ECTS credits for this element of the structured PhD should be as follows:

Initial Research Plan Y1	5 ECTS
Evaluation Y2	25 ECTS

Sign off on Credits for Direct Entry PhD Candidates: The plan and progress to-date will be evaluated formally during the second year internally within the SPRB or IPRB. The SPRB will recommend the outcome of all such evaluations to the IPRB. The IPRB will approve, modify, reject or amend such recommendations and inform the postgraduate in question and the SPRB. Credits will only be awarded following a successful outcome to the evaluation process. Where there is an unsuccessful outcome to this process, it will be the responsibility of the Institute's Postgraduate Research Board, upon receipt of a report from the School Postgraduate Research Board, to recommend whether or not the candidate should be transferred to the Masters Degree register.

Sign off on Credits for Candidates Transferring from the Masters to the PhD Register: The transfer process already includes the development of a research plan for PhD, which is evaluated by an external assessor, as per Code of Practice currently. This will now include a formal recommendation by the School Postgraduate Research Board to the IPRB that the student has achieved 30 planning credits at PhD level. The IPRB will approve, modify, reject or amend such recommendations and inform the postgraduate in question and the SPRB. Upon successful outcome of this process these credits will be transferred over to their structured PhD record. In addition, any credits accumulated from *Element 3* below (i.e. skills based) will also be transferred.

Element 3 Research Skills 60 ECTS

Research skills can be accumulated by a combination of Generic Skills, Discipline Skills, and Non-Taught Skills, as outlined in the sections below. The mix of these components will be determined by the supervisor in conjunction with the SPRB. The total that must be achieved is 60ECTS credits. Specific modules/masterclasses attended must be appropriate to 4th Level PhD students and meet the NQAI Level 10 standard or equivalent and be currently on the Institute's list of approved modules.

Element 3A Generic Skills:

The core strength of a PhD programme is that it facilitates, by means of an original contribution to knowledge in a specific area, the development by the student of a critical/analytical/creative approach to tasks and the acquisition of skills related to understanding fully a topic or series of interrelated topics. However, even highly specialised areas of study require *generic skills*, and some general competencies and skills are to be expected of all persons who attain the distinction of a PhD.

Generic skills recommendations: selected transferable skills modules from the GREP developed by the Research Alliance, namely Personal Development for Researchers; Research Management; Creativity and Entrepreneurship. These will be "front loaded" in the first year. However, the training will be continued for the entirety of the course, with a change in emphasis as the student's abilities and needs change. Additional modules will be developed within the Institute either independently or with the input of the DRHEA/Institute Research Centres will be included as well, including Enterprise Development and Commercialisation Pathways; Data Handling and Analysis; Research Ethics. Winter or Summer Schools are also an option for consideration.

Element 3B Discipline Skills:

Discipline specific modules can be developed either by the School, Department or Research Centres. Alternatively a student may choose modules delivered by other institutions through initiatives such as the DRHEA, TUDA, PRTL Cycle 4 etc. Modules should be at an advanced level and have an approved ECTS credit rating. Winter or Summer Schools are also an option for consideration.

Students may choose to attend modules at any time during their 4 year PhD. However, they are encouraged to attend and develop their skills early in the PhD programme, with the requirement for training to tail off as they approach completion and submission of their thesis.

Element 3C Non-Taught Skills

Elements that result in learners achieving specific pre-defined learning outcomes based on work in their research can be submitted for credit. This can be done in place of taught modules. This would consist of skills gained which will assist in future research. For example, credit could be obtained for writing academic papers, presenting at conferences, presenting to a group of peers in the Institute.

CREDIT TABLE

		Year 1		Year 2		Year 3		Year 4		Overall Programme Totals	
Thesis & Viva Voce Examination								270 ECTS		270 ECTS	
Research Plan		5 ECTS		25 ECTS						30 ECTS	
Generic, Discipline & Other Skills	Generic Skills	5-30 ECTS	15-40 ECTS	5-20 ECTS	15-35 ECTS	0-15 ECTS	0-30 ECTS		0-30 ECTS	15-45 ECTS	60 ECTS
	Discipline Skills	5-30 ECTS		5-20 ECTS		0-15 ECTS				15-45 ECTS	
	Other Skills	0-30 ECTS		0-30 ECTS		0-30 ECTS		0-30 ECTS		0-30 ECTS	
General Induction Programme											
Totals		30-55 ECTS		25-45 ECTS		0-20 ECTS		270-300 ECTS		360 ECTS	

IMPLEMENTATION

A central element of meeting the needs of both a broad labour market and of doctoral students is the development of the students' research, generic and transferable skills, through a formalised and integrated programme of activities. The choice of specific activities can be tailored to suit the experience of students, and to reflect the disciplinary requirements in each broad field. Taught modules are integral to this programme of activities, and may cover both transferable skills development and discipline specific modules. In order to pass such a module, a student will have met the learning outcomes prescribed for that module. The student's academic transcript will record which modules a student has taken and record his or her achievement in each.

The supervision of PhD students and the monitoring of structured PhD programmes conform to procedures established by the Code of Practice. From the perspective of the student, the structured PhD is marked by:

- A high quality research experience and training
- Enhanced arrangements for supervision and mentorship
- Structured arrangements for the development of generic and transferable skills
- Advanced taught courses in their discipline
- Regular monitoring of progress.

The traditional research thesis remains the most common way in which the research is described and examined.

Any structured PhD programme developed at the Institute should be flexible and not prescriptive. There should be a balance between generic and discipline specific modules. Graduate students themselves together with supervisors should assess any skills training they may require in order to effectively implement the methodologies and answer the research question and should take into account the acquisition of particular skills at appropriate times. Therefore the package of modules in order to acquire the requisite number of ECTS will normally be tailor made by the research team in conjunction with the sponsoring Academic Department, School and associated Research Centres, to suit the student and their research & professional plans.

Each Academic Department and School will be responsible for deciding on the best suite of training programmes to be selected for their disciplines, along with Research Teams and Centres.

Generic and discipline modules set down for the discipline can be replaced with approved modules from other HEIs and initiatives and elsewhere, e.g. the Institutes of Technology Research Alliance and the DRHEA or the TUDA. Recognition of Prior Learning is also relevant particularly to graduate students who may already hold a Masters degree and should be considered. Such candidates may be exempt from some taught modules. Supporting modules from taught Masters Degree programmes, which could be upgraded (eg by additional Level-appropriate work) to Level 10 equivalent may also be considered. Graduate students may choose to attend modules at any time during their 4 year PhD. However they should be encouraged to attend and develop their skills early in their PhD programme with the requirement for training tailing off as they approach completion and submission of their thesis.

The SPRB or IPRB as appropriate will oversee the attainment of significant milestones including: review of the research topic with aims and approaches to be adopted (3-6 months); transfer from the Masters to PhD register following peer review of a transfer report (12 months); monitor student progress (6 monthly intervals) and submission of examination forms (45 months). It will also monitor the supervision process with respect to training and mentoring. Student mentors will monitor the student's progress in training and the impact it has on the programme and report to the SPRB or IPRB.

Sign off on Credits for Direct Entry PhD Candidates:

The internal evaluator's report will be submitted to the SPRB and to the IPRB. The IPRB will approve, modify, reject or amend such recommendations and inform the postgraduate in question and the SPRB. This Board will also certify the transfer of the 30 planning credits. (The credits accumulated from skills based training will already be on record.)

Sign off on Credits for Candidates Transferring from the Masters to the PhD Register:

The external assessor's report will be submitted to SPRB and to the IPRB. The IPRB will approve, modify, reject or amend such recommendations and inform the postgraduate in question and the SPRB. This Board will also certify the transfer of the 30 planning credits and others accumulated from skills based training.

DATA RECORDING

Other initiatives to be developed at Institute level, through the Office of the Registrar, include the establishment of joint promotional programmes with collaborating HEIs; introduce more training awareness programmes; implement a Postgraduate Skills Record System and develop Training Development Plan (based on a needs analysis by students and supervisors) – to allow for effective monitoring of the needs of postgraduate researchers and identify changes as required.